

CLAIMS

1. A closure (1) for containers characterized in that it comprises:
- 5 - rigid supporting and sealing means (3); and
 - a covering body (5) made of plastic material, said covering body (5) cooperating with and integrating said supporting and sealing means (3).
- 10 2. The closure (1) for containers as claimed in claim 1, characterized in that said covering body (5) is placed on the outside around said supporting and sealing means (3).
3. The closure (1) for containers as claimed in
- 15 claim 1 or 2, characterized in that said covering body (5) is made of an elastomeric material.
4. The closure (1) for containers as claimed in claim 1, characterized in that said covering body (5) is adapted to cooperate by interference with the
- 20 container opening to prevent the product contained therein from leaking out and to prevent gases and/or foreign substances from entering inside the container.
5. The closure (1) for containers as claimed in any one of claims 1 to 4, characterized in that said
- 25 covering body (5) is made of thermoplastic foam

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material.

6. The closure (1) for containers as claimed in any one of claims 1 to 4, characterized in that said covering body (5) is made of thermosetting foam material.

7. The closure (1) for containers as claimed in any one of claims 1 to 4, characterized in that said covering body (5) is made of crosslinked foam material.

8. The closure (1) for containers as claimed in any one of claims 1 to 7, characterized in that said closure (1) is a plug for containers for foodstuff.

9. The closure (1) for containers as claimed in claim 8, characterized in that said plug (1) is adapted to close bottles containing beverages.

10. The closure (1) for containers as claimed in claim 9, characterized in that said plug (1) is adapted to close bottles containing alcoholic beverages, in particular wine.

11. The closure (1) for containers as claimed in any one of claims 8 to 10, characterized in that said plug (1) is adapted to be placed onto a bottle, in order to close it, using an ordinary plugging machine, and is adapted to be removed from a bottle, when opening it, using ordinary plug (1) removing means.

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12. The closure (1) for containers as claimed in claim 11, characterized in that said plug (1) removing means are a corkscrew.

13. The closure (1) for containers as claimed in claim 1, characterized in that said closure (1) has gas-barrier characteristics, preventing gases from penetrating inside the container, and characteristics ensuring a lack of leakages of the closure material into the container, said barrier and lack-of-leakage characteristics being guaranteed for a period that is not less than the one that can be obtained with a closure made of cork under optimum conditions.

14. The closure (1) for containers as claimed in claim 13, characterized in that it is further equipped with barrier means placed on the side of said closure (1) facing the container interior.

15. The closure (1) for containers as claimed in claim 14, characterized in that said barrier means are composed of at least one thin layer.

16. The closure (1) for containers as claimed in claim 15, characterized in that said at least one thin layer is made of a precious metal, for example gold.

17. The closure (1) for containers as claimed in claim 14, characterized in that said barrier means are composed of at least one disk, for example made of

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glass.

18. The closure (1) for containers as claimed in claim 14, characterized in that said barrier means are composed of at least one washer, for example made of
5 glass.

19. The closure (1) for containers as claimed in any one of the preceding claims, characterized in that said supporting and sealing means (3) are composed of a fitting (7), in particular a threaded hollow fitting
10 (7), that extends substantially along the whole length of the closure (1), said fitting (7) being connected to at least one lower support (9) and at least one upper support (11), said at least one lower support (9) being adapted to be coupled by interference with
15 the container opening to prevent gases from entering thereinto, said at least one upper support (11) and said fitting (7) being adapted to allow insertion of closure (1) removing means into the closure (1) for the removal thereof.

20. The closure (1) for containers as claimed in claim 19, characterized in that said at least one upper support (11) is equipped with a recess (12) for insertion of closure (1) removing means and said fitting (7) is equipped with a plurality of ribs (7')
25 for engaging with said closure (1) removing means.

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21. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of at least one lower threaded support (13) and at least one upper threaded support (15) that are screwed into corresponding recesses formed inside said covering body (5), said at least one lower support (13) being adapted to be coupled by interference with the container opening to prevent gases from entering thereinto, said at least one upper support (15) being adapted to allow insertion of closure (1) removing means into the closure (1) for the removal thereof.

22. The closure (1) for containers as claimed in claim 21, characterized in that said at least one lower threaded support (13) and said at least one upper threaded support (15) are adapted to engage a hollow elongated support member (14) placed inside said closure (1).

23. The closure (1) for containers as claimed in claim 22, characterized in that said upper support (15) is equipped with an insertion recess (20) for the closure (1) removing means and said elongated support member (14) is equipped with a plurality of longitudinal ribs (21) for engaging said closure (1) removing means.

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24. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of an elongated support body (26) that extends substantially
5 along the whole length of the closure (1), said elongated support body (26) being equipped with at least one lower sealing member (28) adapted to guarantee sealing of the closure (1) against the container opening walls.
- 10 25. The closure (1) for containers as claimed in claim 24, characterized in that said covering body (5) is of cylindrical shape and said lower sealing member (28) is shaped as a frustum of a cone whose radius is less than the radius of the covering body (5).
- 15 26. The closure (1) for containers as claimed in claim 24 or 25, characterized in that said elongated support body (26) is further equipped with at least one upper sealing member (30) adapted to improve sealing of the closure (1) against the container
20 opening walls.
27. The closure (1) for containers as claimed in claim 26, characterized in that said covering body (5) is of cylindrical shape and said upper sealing member (30) is shaped as a frustum of a cone whose radius is
25 less than the radius of the covering body (5).

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28. The closure (1) for containers as claimed in any one of claims 24 to 27, characterized in that said elongated support body (26) is of cylindrical shape and is closed at the end thereof that is facing toward
5 the container interior.

29. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of a first hollow member (30) whose cross section is "T"-
10 shaped and a second hollow member (32) whose cross section is in the shape of an inverted "T", said second hollow member (32) being adapted to contain inside an end of said first hollow member (30) through threaded engagement of respective ends (31; 33) of
15 said two members (30, 32), said members (30, 32) being equipped with respective ends (30'; 32') having the same shape and being respectively equipped with recesses (35; 37) for inserting means for removing said closure (1).

20 30. The closure (1) for containers as claimed in any of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of a cylindrically-shaped upper hollow member (40) open at both ends (41, 42), said upper member (40) being
25 placed above and outside a lower hollow member (43)

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that, in its central part (44), is shaped as an elongated cylinder that is inserted into said upper member (40), said lower member (43) in its part (46) facing toward the container interior being shaped as a flat closure equipped with insertion flarings (48) for insertion of said closure (1) into the container, a recess (49) allowing penetration of removing means into said closure (1) being directly formed in said covering body (5).

31. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of three mutually coupled internal hollow members (50, 55, 58), said first internal hollow member (50) having an elongated cylindrical shape and comprising a step (51) formed inside it and two respective threaded coupling sections (52, 53), said first internal hollow member (50) being further equipped with a circular upper sealing projection (54), said second internal hollow member (55) having a cylindrical shape and being equipped in its upper part with a recess (56) for insertion of means for removing said closure (1) and being equipped in its lower part with a threaded section (57) adapted to cooperate through engagement with the corresponding threaded section (52) of said

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first internal hollow member (50), said second internal member (55) abutting against said first internal member (50) on the shoulder of said step (51) in order not to excessively penetrate into said first member (50), said third internal hollow member (58) being almost completely threaded (in 59) in order to cooperate through engagement with the respective threaded section (53) of said first internal member (50), and being equipped with a lower flat part (60) to perform a sealing and barrier function for said closure (1).

32. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of a bearing member (63) having a substantially elongated cylindrical shape, said bearing member (63) being externally threaded (in 64) all along its length and being internally equipped with a plurality of ribs (65) for engaging with means for removing said closure (1), around said bearing member (63) there being screwed a first closure member (66) and a second closure member (67) that are identical and are composed of an internally threaded cylindrical body (66', 67') closed at one end by a circular flat cover (66", 67") with its external edges bent slightly

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inwards.

33. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of a bearing member (70) having a substantially elongated cylindrical shape, said bearing member (70) being internally threaded (in 71) all along its length and being internally equipped with a reinforcement cylindrical threaded structure (72) screwed inside it, an upper closure member (73) and a lower closure member (74) being screwed inside said bearing member (70), said upper closure member (73) being equipped with a cylindrical threaded body (74) that is screwed inside said bearing member (70) and that is overlapped by a cover (75) containing a recess (76) for insertion of means for removing said closure (1), said lower closure member (74) being composed of a cylindrical threaded body (77) adapted to be screwed inside said bearing member (70) and a circular flat lower cover (78) with flarings (79) for insertion into the container opening, said lower closure member (74) being shaped in such a way as to form a circular recess (80) between cylindrical body (77) and cover (78), said recess (80) being adapted to house an end of the bearing member (70) to increase the sealing and

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strength of said supporting and sealing means (3).

34. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of an upper closure member (91) and a lower closure member (92), said upper closure member (91) being composed of a hollow cylindrical body equipped at one of its ends with a plurality of small teeth (93) and at the opposite end with a cover (94) having a recess (95) for insertion of means for removing said closure (1), said lower closure member (92) being composed of a hollow cylindrical body equipped at one of its ends with a plurality of small teeth (96) and at the opposite end with a circular flat cover (97) equipped with a circular collar (98) adapted to contain the material of said covering body (5).

35. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of an upper closure member (101) and a lower closure member (102), said upper closure member (101) being composed of a hollow cylindrical body equipped at one of its ends with a tooth (103) and at the opposite end with a cover (104) having a recess (105) for insertion of means for removing said closure (1), said lower

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closure member (102) being composed of a hollow cylindrical body equipped at one of its ends with a tooth (106) and at the opposite end with a circular flat cover (107) equipped with a circular collar (108) adapted to contain the material of said covering body (5).

36. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) are composed of an upper closure member (121) and a lower closure member (122), said upper closure member (121) being composed of a hollow cylindrical body equipped at one of its ends with a threaded or toothed wall (123) and at the opposite end with a cover (124) having a recess (125) for insertion of means for removing the closure (1), said lower closure member (122) being composed of a hollow cylindrical body equipped at one of its ends with a threaded or toothed recess (126) and at the opposite end with a circular flat cover (127) equipped with a circular collar (128) adapted to contain the material of said covering body (5).

37. The closure (1) for containers as claimed in any one of claims 1 to 18, characterized in that said supporting and sealing means (3) comprise a reinforcing member (129) having a basically

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5 cylindrical hollow body (130) terminating at both ends
in annular shoulders (131, 131'), a lower and an
upper, said lower annular shoulder (131) having a
larger diameter than said upper shoulder (131'), a
10 plurality of annular reliefs (132) being situated on
the outer surface of the hollow body (130), the lower
end of said hollow body (130) being closed by a base
(133) and its upper end open, and the covering body
(5) being formed directly on said reinforcing member
15 (129), in such a way that the elastomeric material
fills the cavity of said hollow body (130) and the
external space between said lower and upper shoulders
(131, 131'), said closure (1) being frustoconical in
shape.

20 38. The closure (1) for containers as claimed in
any one of claims 1 to 18, characterized in that said
supporting and sealing means (3) comprise a
reinforcing member (134) and a closure member (135),
these being coupled together detachably, said
25 reinforcing member (134) comprising a basically
cylindrical hollow body (136) closed at the lower end
by a base (137) and open at the upper end, around the
outside of which lower base (137) is an
upwardly-directed annular profile (138), a plurality
of longitudinal fins (139) being provided on the

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inside surface of said hollow body (136); which
closure member (135) comprises a disk (140) whose
upper surface includes a central depression (141) and
on whose lower surface is a sleeve (142) whose form
5 and dimensions are such that it can be inserted into
said hollow body (136), a plurality of longitudinal
fins (143) being provided on the inside surface of
said sleeve (142); which covering body (5) is of
basically cylindrical form with an outward swelling
10 and an internal cavity, the surface of which is
provided with ribs (144).

39. The closure (1) for containers as claimed in
claim 38, in which said covering body (5) is made of
LSR silicone.

15 40. The closure (1) for containers as claimed in
any one of the preceding claims, characterized in that
said closure (1) is further adapted to bear, in its
upper part facing outside the container, writing
and/or other signs relating to the container contents.

20 41. The closure (1) for containers as claimed in
any one of the preceding claims, characterized in that
it is further covered with a protective film placed
all around said closure (1).

25 42. The closure (1) for containers as claimed in
claim 41, characterized in that said protective film

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is a silicone film.

43. The closure (1) for containers as claimed in any one of the preceding claims, in which said thermoplastic foam material is made by a hot-molding process involving the use of a fluid in the supercritical state as a blowing agent.

44. The closure (1) for containers as claimed in claim 43, in which said fluid is nitrogen in the supercritical state.

45. The closure (1) for containers as claimed in any one of the preceding claims, in which the outside surface of said closure is marked by a laser-marking process.

46. The closure (1) as claimed in claim 45, in which said laser is an Nd:YAG laser.

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